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The History of Stoves

(1400-1800)

By L. L. THWING

In early Colonial days, a room with a fireplace was called a fireroom and still earlier, in England and France, a heated room was called a stove. This latter room, however, would not be in a dwelling, but in a hot-house or a drying room. By what gradual steps the name was transferred from the room itself to the device that heated it, we do not know. The above hot-houses, drying rooms and even Roman baths were heated by hot air flues, but down to the 15th century, and later, the only heat in an English castle was an open fire in the middle of the hall. There was no chimney, and the smoke escaped through a sort of cupola called a smoke *louver*. Charcoal burning firepans or braziers were also used in the smaller apartments. The first English chimneys were simply flues cut through the walls, opening outward a few feet above the level of the hearth.

The Romans had bakers' ovens, and from these the Swiss are supposed to have developed a sort of stove, built into the wall of the house and fired from the outside. What Beckmann calls "German Stoves" seem to have been similarly constructed of brick. This development is said to have occurred from the 10th to the 14th centuries, and, although the statement is based on scant testimony, it is not improbable. It should be kept in mind, however, that chimneys were as yet unknown. Draft was provided by a hole, or at most a short stack at the top of the "stove."

The process of casting iron in a mould was discovered in the 14th century, and we are told that stoves of this new material were first made in Alsace in 1475. It is doubtful, however, if such "stoves" were anything that we would recognize today as such. Mercer, in his valuable book on the development of stoves, traces them from the first cast iron firebacks of the 15th century to the complete box stove. Firebacks are cast iron plates for the back, and sometimes the sides, of the fireplace. They were in common use when the Puritans first came to Salem, and, shortly after that, they are mentioned in lists of articles imported from England.

The following is a free transcription of Feldhaus' comments on the history of stoves (*Die Technik "Ofen"*); "Cast iron "Ofen platten" were noted in south Germany as early as 1325, and, in 1490, masses were sung for Master von der Mosel, the cast iron

(*Continued on page 4, column 1*)

Our Purpose

The purpose of the association is to encourage the study and better understanding of early American industry, in the home, in the shop, on the farm, and on the sea, and especially to discover, identify, classify, preserve and exhibit obsolete tools, implements, utensils, instruments, vehicles, appliances and mechanical devices used by American craftsmen, farmers, housewives, mariners, professional men and other workers.

Dues

The annual dues are one dollar, payable September first, for the year immediately ensuing. *The Chronicle* for the current year is sent to all members without additional charge. Back numbers (except No. 12) may be secured from the Treasurer for 20c each. For further information, address any of the officers. See page 5.

Molding Tools

By NEWTON C. BRAINARD

On looking over an old chest of carpenter's tools, I became interested in the elaborate set of molding tools (and incidentally I have learned that they should be called *tools*, — not planes). I wondered where the men who used them got them and how they were made. The examination of several additional sets has not increased my knowledge greatly, except in a negative sense. The number of different makers who appear in every set is amazing. Rarely have there been more than two or three by any one maker in a single set, nor have there been many duplications between sets. Tool making apparently was a distinctly local industry, with a maker of planes and molding tools in almost every town. A few have survived in what are now among our large tool factories. While the wooden blocks were of local manufacture, this was not usually the case with the irons. These bear names differing from the blocks, and often of more or less well-known tool makers. The earliest set examined, which possibly dates before 1800, contains several tools of English make. On looking through a file of *The Hartford Courant* about 1830, advertisements of at least three plane and molding tool makers were noted, as well as advertisements calling for beechwood suitable for planes, and for apprentices and journeymen. One maker had a New York sales office. Two sets of tools have come to my attention, owned by descendants of men who were described as ship carpenters. The lack of relation between these finishing tools and the heavy work of ship building makes one wonder if two distinct trades were not recognized, the shipwright who built the hull, and the carpenter who sup-

(*Continued on page 2, column 3*)

The Numeral One

By Joseph E. Sandford

The numeral one has been linked with the letter I in both Roman and Arabic numbers since the early days of their use in Europe. In Roman minuscule numerals we frequently find a long "i" written "j" as xviij. This was also used as a final when two "i's" came together at the end of a word. Physicians use such Roman numbers on prescriptions. In Arabic numerals we often find the J, sometimes dotted, as (e), standing for the numeral one, during the seventeenth and eighteenth centuries. Later it became obsolete. Our (f) is a date from a French pottery mark.

The reason for the use of J in dates is not hard to find. Authorities tell us that J is nothing but a modified form of the letter I, which first appeared as an initial letter. It was not set apart for the *letter* J until about 1620, in England. In black-letter countries such as Germany the same majuscule serves for both I and J to this day.

At (a) we show a capital I from an English book of 1477; (b) is a letter I from a German book of 1517; (c) an initial I from an English printer's trade-mark of 1550, while (d) is the 18th century italic J, which earlier was a capital I. Note the decorative crossbar.

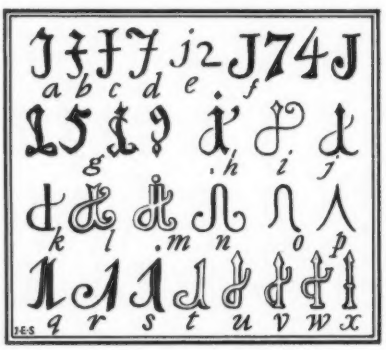
The theory has been advanced that in dates written J730, the J supposedly stands for "Jahr" (The Chronicle—Jan. 1936). But considering the origin and the fact that the J has been used as a final, as well as a first, number and that we find it preceded by the word "Anno," there seems no reason to believe that it is anything but a now obsolete form of the numeral one.

The tendency to flourish, in all pen letters, varied the shapes which the numeral one took in those countries using Fractur. To the eye accustomed to the gothic space-filling quality of this kind of black-letter, the simple unadorned down-stroke seems insufficient —hence the efforts to ornament and strengthen the numeral one such as the pair we find in (g). Compare these with (b) whose construction they resemble, and also note the forked base as in (h) and (j).

Examples of what might be called the tendril flourish are shown from (h) to (l). Note the diamond-shaped tip on the vertical stroke of (i) and (j). All are from southern Germany and Switzerland, excepting (h) which is an 18th century black-letter numeral, of unknown country, from Day's *Alphabets, Old and New*. Our (j) and (k) have been found used as last, as well as first, numbers in dates.

The idea that these decorative forms are monograms has been suggested, but it seems more reasonable to believe them merely flourished ones. But in (m) it would not be hard to read J H J, which Mr. H. K. Landis probably would say was "Jahr Herr Jesu," i.e., the year of our Lord. Whatever meaning may be attributed to it, it is evidently derived from the style (l) and (k), which has been read as a monogrammed a.d. or Anno Domini by Mr. Landis, but which the writer believes to be merely a flourished one.

The two strokes which suggest a pair of J's back to back are found in (q), a numeral one from a Brunswick writing book. It was not in a date.



The Letter I and the Numeral One

(a) Capital I—Wm. Caxton's Type 2, 1477. (b) Capital I—Schoensperger Nuremberg, 1517. (c) Initial I—Wm. Baldwin's mark, 1550. (d) Italic Capital J, 18th Cent. (e) Writing book of Maria Strick, 1606. (f) Limoges Fayence mark. (g) Durer's woodcut of Emp. Maximillian. (h) Black letter one, 1719, Day "Alphabets." (i) Swiss chair back, 1654. (j) Swiss school house, 1701. (k) Day "Alphabets," 1721. (l) Swiss chair back, 1703. (m) Numeral one Franconian chest date, 1798. (n) Swiss house date, 1805. (o) Wire work, 1740, Day. (p) Brandenburg tankard, 1735. (q) One from Overheide, Braunschweig, 1665. (r) Lower Saxony, 1794. (s) Joseph Meyer's Birth Certificate, 1807. (t) Stove plate, 1764. (u) Date stone, 1765. (v) Stove plate, 1759. (w) stove plate, 1762. (x) Stiegel stove plate, 1765.

Many Germans migrated from the south of Germany to settle in Pennsylvania, bringing the writing and decoration which they knew in the old world. From (u) to (x) we show numeral ones from their 18th century dates in iron and stone. Comparison of these with (i), (j), and (k) will show that they are crude Pennsylvania versions of the tendril-flourished one of the Continent. These tendrils are sometimes reversed, just as the N is, by those of little education. Sometimes these tendrils sprout from part way up the stem, probably because their structural origin has been forgotten.

At (n), (o), and (p) are emphasized ones. A Swiss house date gave us (n) which has a resemblance to (l) and (m). At (p) is a one from a Brandenberg tankard, it is not unlike a small script "i." In the 15th century, sevens were often made in the same way.

From "Im Jahr Christi" 1794 we get (r) which may be compared with (s) from a Berks County birth certificate. Our (t) is very common throughout the 18th century, and is from a stove-plate date 1764. The use of the knob midway of the stem is shown at (x) found in letter I forms as early as the 12th century.

Molding Tools

(*Continued from page 1, column 3*)

plied the interior finish. An interesting sidelight was brought by a friend, who found molding tools imported from England still on sale in a hardware store in Quebec. They were carried not only in the finished form, but also in plain blocks, so that the purchaser might make his own shapes. The original inquiry has proven far too broad to follow up, but it contains innumerable interesting sidelights. Possibly we still have some carpenters who can explain the markings on the ends, which seem to have little relation to any dimensions on the tools. Some numbers, of course, refer to the pattern; others seem to indicate the thickness of board for which they are adapted. How to sharpen the blade and keep its shape to match the block is an art in itself which was not too well understood by many of the owners. To use them well, especially when two or more are combined to make an elaborate molding, requires a degree of skill which only a real craftsman can show.

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The Tanner and the Currier

(Continued from last issue)

By William B. Sprague

The skin was then folded with the grain side in contact (D648, R), and rubbed with a corrugated or smooth board (Fig. 2 I, N), variously called a *raising board* (D1874), *graining board* (L), *arm board* (I), *pommel* (F, G) or *crippler* (D648). This was called *boarding* (I, L), or *graining* (D1006, F), the object being to give a granular appearance and to increase suppleness and flexibility (F, G, I). It was then *sized* with a mixture of two or more of the following substances: beeswax, pitch, linseed oil, tallow, soap, glue, and logwood extract (I), applied with a brush or sponge (F, L), and rubbed in with a glass slicker (G, I, Fig. 2E), and afterwards *waxed*, with a brush dipped in oil and lamp black, on the flesh side, till thoroughly black (F, L). The wrinkles were removed and the coarse grain smoothed with a "good grit stone" (F), or with the edge of a "narrow, smooth stone set in a handle (Fig. 2L), and with an iron slicker of similar shape" (Fig. 2K) the table on which this was done being inclined away from the workman (H). Final graining was produced by rubbing with a "ball of boxwood (No Fig.) round the center of which small parallel grooves are cut" (G, M, O), "forming an equal number of narrow ridges" (E), or with a *paumelle* (pommel) of cork (N, Fig. 2M) which had a smooth surface (F), and a high polish obtained (R) by applying a little oil, and rubbing with a glass ball (G, M, O, No Fig.), cut into a polygonal surface (E), or with a glass slicker (H).

A further process, known as *staking*, was employed only when extreme smoothness and suppleness was required, as for glove-making, and was probably applied only to tawed skins (F, G). The *staking stand* (Fig. 2G) consisted of an iron blade, set in the upper end of an upright plank, mounted in a heavy stand or bolted to the floor (G). The skin was dipped in water for a few minutes (F), and thrown over the blade of the stake. "The workman, holding the extremities of the skin with both hands, pulls it in all directions forcibly, but skilfully, against the smoothing stake" (G), sometimes even adding the pressure of his knee to one end or the other (T). Another means of accomplishing the same purpose was with the *arm stake* and the *perch* (T). The arm stake (Fig. 2C) had a similar blade, although smaller, mounted at one end of a wooden handle, and a slightly curved cross-piece of wood, similar to the top

Shaving on the Beam
from Tomlinson's Illustrations (O)

piece of a crutch, at the other. This cross-piece fitted under the right armpit, and the fingers of the right hand were passed through the aperture in the handle. The tool hung from the workman's left shoulder, when not actually in use, by means of a leather loop around his neck. The perch (Fig. 2B) was a heavy H-shaped frame of wood, inclined and fastened against the wall, there being a movable wooden bar resting on the cross-piece, pivoted at one end, and capable of being locked or unlocked at the other. With this bar raised at one end, perhaps half a

Graining and Smoothing
from Tomlinson's Illustrations (O)

dozen skins were thrown over the cross-piece, so that about two-thirds of their length hung down in front, and the bar was then let down and locked, holding the skins as in a vise. The workman then grasped the topmost skin at its lower edge with his left hand, and holding it taut but constantly shifting his grip, forced the blade of the arm stake against the skin from its upper part to its edge, until all parts which he could reach were thoroughly smoothed and stretched. As he finished with each skin, he flipped it over the cross-piece of the perch, and proceeded with the next, and when the outer ends of all were staked, their position in the perch was reversed, and the other ends likewise treated (T).

The foregoing explanation will give a general idea of what tools and processes were used upon skins, as received from the butcher, before they could be used for the manufacture of shoes, gloves, harness, trunks, and other leather objects. In subsequent articles, it is planned to describe in detail how each of these finishing trades were carried on.

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The History of Stoves

(*Continued from page* 1, *column* 2)

oven maker. In 1620, portable stoves are mentioned in the description of Heidelburg castle. Sheet iron stoves with serpentine formed stovepipes were suggested by Franz Kessler in his *Holtzsparkunst* (1618)." The oven plates were probably fire backs, and Master Mosel's product may well have been the first "dutch ovens" of the type used by the Colonists. Feldhaus also mentions that De Caus' *Hortus Platinus* (1620) pl. 9 shows the method of heating the Orange Tree House of Louis XIV. (The writer has been unable to locate a copy of this).

There are two general types of stoves, the six-plate or box stove and the vertical cylindrical stove. The latter is said to have developed in Vienna, but no details have been published. Mercer, however, has shown us very clearly the development of the six-plate stove. (Box stoves are known by the number of cast iron plates used in their construction). In northern Germany, in the 16th century, stoves consisted of five plates, bolted or rivetted together to make a box, open at one end. This end was bricked into the chimney and opened into the flue. The closed end projected into an adjoining room, so that the heat from the fireplace was utilized to heat another room. The next move was to bring the "stove" down nearer the floor, and, by leaving an opening in the end plate, it could be used, whether there was a fire in the fireplace or not. It was, however, still bricked into the chimney, and had but five plates. The next improvement was to add another plate and move the now recognizable stove out, at least a little, from the chimney wall, connecting it to the flue by either a clay or sheet iron pipe. These developments were not rapid, and extended through the 16th and 17th centuries. During this time, cylindrical stoves were developing in Vienna, and tile stoves in Holland. If stoves were used elsewhere in Europe or in England, no mention of the fact has so far been found.

In 1650, John Clarke made an invention for "saving wood and warming rooms" which the General Court patented for a term of three years, granting a royalty of 10 shillings for each person using it. This was of sufficient importance to be extended when it expired in 1656. There is no further description of this device. (*Massachusetts Colonial Records*, Vol. III, p. 283).

Dr. Mercer states that stoves were introduced into England in the middle of the 18th century, at which time they must have been fairly common in Germany and the Lowlands. The English (and the Colonists) seem to have been prejudiced against stoves, and apparently never used them, unless they were forced to, as, for example, on shipboard. Stoves are never mentioned by Dickens, Thackeray or Smollet or any other English authors. What comments there are by 18th century commentators are complaints that a room heated by a stove is poorly ventilated. It has indeed a close stuffy smell, as many of us can remember. When we consider that bodily cleanliness in the early 18th century was not what it is today, and that many smoking candles were needed to light a room, ventilation was certainly necessary. With an open fire, there is always good ventilation, and the English people were accustomed to it, and, as we know today, a fireplace is a convenient place to throw combustible trash. 18th century men-folks apparently used it as a cuspidor, as complaint was made that, when they expectorated on the stove, bad odors resulted.

The 17th century Boston diarist, Samuel Sewall, notes, in 1706, a visitor, "passing out of the Stove-room into the Kitchen." By this is probably meant a room with a fireplace in it, but it is possible that the judge had some sort of stove, perhaps a Dutch Tile stove, as he was a wealthy man, having married Mint-master Hull's daughter, who is reported to have given her weight in silver pine shillings as a dowry.

The so-called Pennsylvania Dutch, who were not Dutch at all, but Germans, were the first to cast stove plates in the United States. It might be inaccurate to state that, until about 1800, no stoves were made elsewhere in the United States, but if they were, no one has made a notation of the fact. These Germans, who settled in Pennsylvania in the first half of the 18th century, set up furnaces for casting iron, and soon were making stove plates. The first were five-plate or jamb stoves, such as have already been described. They were about two feet high, two feet wide, and projected into the room about two feet. There were no legs and the heat came from the fireplace in another room. Three sizes were made, the largest weighing about 450 pounds and selling for £5. By 1760, regular six-plate stoves, with legs and doors and drafts, were being marketed, but their use seems to have spread no further than New York City, at the outside. The following are the earliest United States patents on stoves: R. Haeterick, June 11, 1793; Godfrey & Lane, July 14, 1798; T. Hirst, March 11, 1797; G. Wheaton, March 29, 1797.

Mercer says that the above six-plate stoves were introduced here "by way of English ownership of American furnaces . . . where (in England) the six-plate stove had been introduced, probably by the middle of the 18th century." Dr. Mercer's opinion is entitled to very respectful consideration, but, as previously commented, there seems to be no trace of the use of stoves for domestic heating in England as early as this. Furthermore, Franklin refers to them as "Holland Stoves."

In this discussion of stoves at the end of the 18th century, it has not been forgotten that Benjamin Franklin invented what is often called a stove, as early as 1742. This was really a cast iron fireplace, with a system of return flues at the back for the conservation of heat. It was intended to be bricked into the opening of the existing fireplace. According to Keep (see Bibliography), "These were cast at the Warwick Blast Furnace in Chester County, Pa., and in 1875 sold for £5.10.0. This fireplace was sold in New England soon after its invention, and its use became common. In appearance it resembled a modified fireplace projecting somewhat into the room, and, because of that, the cast iron radiated more heat, and thereby was a great improvement over the common recessed fireplace.

(*Continued in next issue*)

Mr. Charles S. Boyer extends a cordial invitation to members of the Association to view his collection of implements at Moorestown, N. J., provided a previous appointment be made, by telephoning him at Camden 3333-W or Moorestown 410. Mr. Boyer says: "I have arranged, and set up in the basement of my home, a blacksmith's shop, wheelwright's shop, cooper's shop, carpenter's shop, currier's shop, gold beater's shop, shoemaker's shop, saddler's shop, household industries and farm implements. All of these are fairly well supplied with tools of ancient days, mostly collected in South Jersey."

Early American Industries Association

Early American Industries Association

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Communications should be addressed as follows: Pertaining to The Chronicle, to W. B. Sprague. Applications for membership, to S. E. Gage. Suggestions for prospective members, to A. E. Lownes. Other matters to E. T. Goodnow. Addresses as above.

This issue was printed by Leon S. Case Flushing, N. Y.

W. B. Sprague, *Editor.*

Advertisements, two cents per word (no display). Remittance should accompany copy.

Our Finances

During the month of March, a notice was mailed to all the members, requesting them, by persuading others to join the Association or by contributing money, to co-operate, in making possible three more issues of The Chronicle, instead of one, during the fiscal year 1935-6. We are sending this issue to press without awaiting the result of this appeal, so that it may be distributed promptly, if the response is what we hope for, instead of being held up, possibly until June, as would seem advisable, if it were to be the last issue of the year. If, therefore, you receive your copy a month of two before June first, you can rest assured that we have been financed to publish at least one more number before September. We hope, however, that, whatever happens, no one will relax the effort to interest new members, as without question, the usefulness of the Association will be increased, and its permanency assured, in direct proportion to the growth of its membership.

Annual Meeting

Although the by-laws provide that the annual meeting shall be held on or about September first, it is not too soon now to begin to make plans for it, and we will welcome suggestions as to where it shall be held. It would be particularly helpful, if a group living at some conveniently accessible point would volunteer to act as a committee on local arrangements. Needless to say, those who attend the meeting will expect to defray their own expenses, so that no financial burden will be assumed by the committee.

Back Numbers

As already reported, our stock of No. 12 of The Chronicle is exhausted. Mr. Goodnow can supply any of the other numbers, at twenty cents each, although he reports that some of the piles,—notably those of Nos. 2, 3 and 6,—are very low. If any members have copies of No. 12, which they do not care to keep, and will mail them to him, he will distribute them, in order of application, to other members who are anxious to complete their files.

Controversies

The word "controversy" has a disagreeable sound, but the preferred dictionary definition of "discussion" and "debate" implies no bitterness. As noted in more detail, under the heading "Communications," we have recently been the interested audience of a good-natured controversy between Messrs. Thwing and Vail, which culminated in a mutual admission that both were right, and in each expressing gratification at the other's interest in the subject under discussion. Just now there seems to be an honest difference of opinion between Messrs. Landis and Sandford, as to the significance of certain early numerals (see "Curious Dates," last issue, and "The Numeral One," this issue). Such controversies are almost always valuable factors in arriving at correct conclusions on subjects as to which no certain knowledge is available. Let no-one hesitate to take issue with any statement which appears in our columns. We are only too glad to publish any such opinion, provided, of course, that no note of discourtesy creeps into it, and we trust that every one of our contributors,—to whom we are everlastingly grateful for their assistance,— will welcome, with equal heartiness, all such constructive criticism.

The Sugar Maple

"The sugar maple, so little thought of by our northern agriculturists, would, by proper attention, in a little time become a source of profit to the country. I am not a little surprised that our farmers should have been so long inattentive to the subject. The rock maple will pay for its own rearing in timber and fuel; so that the sugar and molasses which it yields will be nearly net gain — as the business of making sugar would be carried on at that season of the year when little else could be done. I hope the work will be soon begun — let each farmer, as every spring and autumn comes round, transplant from his forest to the sides of the highways leading along his land, as many of these trees as he conveniently can, until the ground is completely occupied. What a change such a course, if generally pursued, would effect in the appearance and condition of the northern States. Our highways and avenues, lined with this useful, cleanly, and highly ornamental tree, would give new life and animation to the valleys and mountains, and greatly add to the beauty of our scenery. And instead of importing hundreds of thousands of hogsheads of sugar and molasses from the West Indies yearly, we should in the short space of twenty-five or thirty years, not only supply ourselves with these indispensable articles, but should have a surplus, which at no distant period would be an important item of exportation."

The foregoing item, from the *New England Farmer,* of April 11, 1828, is only one of many similar ones which may be found in various contemporary farm periodicals — apparently an organized publicity "drive" in behalf of the maple. Its measure of success may be judged from the many fine rows of these trees which still line New England country roads and which must have been planted at about that time. — H. G. H.

Natural ice was shipped from New York to Charleston in 1799. The manufacture of artificial ice was perfected during the third quarter of the 19th century.

The Chronicle

The Lumberman

By Howard G. Hubbard

(*Continued from last issue*)

David Stevenson, in the Transactions of the Royal Scottish Society of Arts, 1841, also has an interesting chapter about this industry. "The timber trade of the United States and of Canada, from the quantity of wood which is required for home consumption and exportation, is a source of employment and emolument to a great mass of the population. It is carried on to a greater or less extent on all American rivers, but the Mississippi and St. Lawrence are more especially famous for it. The chief raftsman, under whose direction the timber expeditions on these rivers are conducted, are generally persons of great intelligence, and often of considerable wealth. Sometimes these men, for the purpose of obtaining wood, purchase a piece of land, which they sell after it has been cleared; but more generally they purchase only the timber from the proprietors of the land on which it grows. The chief raftsman and his detachment of workmen repair to the forest about the month of November, and are occupied during the whole of the winter months in felling trees, dressing them into logs, and dragging them with teams of oxen on the hardened snow, with which the country is then covered, to the nearest stream. They live during this period in temporary wooden huts.

"About the middle of May, when the ice leaves the rivers, the logs of timber that have been prepared and hauled down during the winter are launched into the stream, and being formed into rafts, are floated to their destination. The rafts are furnished with masts and sails, and are steered by means of long oars, which project in front as well as behind them: wooden houses are built on them for the accommodation of their crews and their families. I have several times, in the course of the trips I made on the St. Lawrence, counted upwards of thirty men working the steering oars of the large rafts on that river. Those rafts are brought down the American rivers for distances varying from one hundred to twelve hundred miles, and six months are often occupied in making the passage. When it is at all possible, they moor them at night in the still waters at the edge of the river; but when this cannot be done, they continue their perilous voyage in the dark, exhibiting a light at each corner of the raft to warn vessels of their approach. The St. Lawrence rafts vary from 40,000 to 300,000 square feet, or from about one to no less than seven acres in surface, and some of them contain no less than 5000 pounds worth of timber. If not managed with great skill, these unwieldly specimens of naval architecture are apt to go to pieces in descending the rapids, and it not infrequently happens that the labour of one, and sometimes two seasons is lost in a moment. An old and experienced raftsman, with whom I had some conversation on board one of the St. Lawrence steamers, informed me that he, on one occasion, lost 2500 pounds by one raft, which grounded in descending a rapid and broke up. He said the safest size for a raft was about 40,000 to 50,000 square feet, and that five men were required to work a raft of that size."

Stevenson goes on with descriptions of some of the principal species of trees found in the American forests, and he writes a paragraph about the "indiscriminate massacre of noble trees" which is a surprise to those of us who have had the impression that the conservation of American forests began with Theodore Roosevelt. He writes:

"The Americans are indebted to their forests for the greater part of the materials of which their public works are constructed. These forests are originally understood to have extended, with little exception, from the sea coast to the confines of the extensive prairies of the western states; but the effects of cultivation can now be traced as far as the foot of the Allegheny Mountains, the greater part of the land between them and the ocean having been cleared and brought into cultivation. It is much to be regretted that the early settlers were not directed by a systematic plan of operations, so as to have left some relics of the natural produce of the soil, which would have sheltered the fields and enlivened the face of the country. Large tracts of country, however, which were formerly thickly covered with the finest timber, are now almost without a single shrub, every thing having fallen before the woodman's axe; and in this indiscriminate massacre there can be no doubt that many millions of noble trees have been left to rot, or, what is scarcely to be less regretted, have been consumed as firewood. This work of general destruction is still going forward in the western states, in which cultivation is gradually extending; and the formation of some laws regarding the clearing of land, and enforcing an obligation on every settler to save a quantity of timber, which might perhaps be made to bear a certain proportion to every acre of land which is cleared, is a subject which I should conceive to be not unworthy of the attention of the American government, and one which is intimately connected with the future prosperity of the country. But should population and cultivation continue to increase in the same ratio, and the clearing of land be conducted in the same indiscriminate manner as hitherto, another hundred years may see the United States a *treeless* country."

Table Forks

Helen Evertson Smith, in her *Colonial Days and Ways*, Century Co., 1900, states, (page 174) that, prior to the introduction of forks, some fastidious diners ate with sharply pointed bits of steel, about four inches long by one-eighth of an inch in diameter, and (page 11) that forks are first mentioned in Colonial wills in the last quarter of the seventeenth century, about which time they seem to have come into use among the upper classes of England. It appears to be a commonly accepted fact that Governor Winthrop brought the first fork to New England in 1630. Probably the earliest type is that, of which almost everyone must have seen one or more examples, with two very sharp tines, about two inches long and about one-half inch apart, with an abrupt and comparatively high "ridge," dividing the tines from the handle. Mr. Wallace Nutting, in the *Furniture Treasury*, Old America Co., 1928, illustrates (Pl. 3816) a set of these, known to have been made in 1732. The three-tined fork of the same type is logically assumed to have been an improvement and hence of a later date. There is a specimen in the museum of the New York Historical Society, labelled as having been found between the timbers of U.S.S. Constitution, when she was rebuilt after the War of 1812. It would seem, however, that the period during which three-tined forks *of this type* were used must have been comparatively short, or else that they were not popular, as they appear to be much scarcer than those with two tines.

Early American Industries Association

Membership

Membership lists should be amended as follows: Corrections are in italics; (N) indicates new members; (S) indicates non-member subscriber; (Ch.) indicates change of address.

CONNECTICUT

Georgetown: Millar, Bruce, Redding Road (Ch. from Norwalk, Conn.)

ILLINOIS

Chicago: Fisher, Varies, 105 S. LaSalle St. (N); Kellar, Herbert A., 679 Rush St. (N); McMurtrie, Douglas C., 2039 Lewis St. (N)

Springfield: Illinois State Historical Society (S)

MASSACHUSETTS

Boston: Hower, Ralph M., Baker Library, Soldiers Field (N)

Cambridge: Killian, J. Rhyne, Technology Review (N)

Falmouth: Clulow, P. T. (Ch. to West Falmouth, Mass.)

NEW JERSEY

Boonton: Batchelder, B. F., 605 Washington St. (N)

Newark: Winser, Miss Beatrice, Newark Museum (N)

NEW YORK

Brooklyn: Edsall, Mrs. Carroll A. (Ch. to Ilion, N. Y.); Murphy, Mrs. M. (Ch. to 25 Remsen St.)

Elsmere: Wyant, *Major* L. B.

Ilion: Edsall, Mrs. Carroll A., 421 Otsego St. (Ch. from Brooklyn, N. Y.)

New York: Curtis, Morris (Ch. to 225 W. 57th St.); Heaney, Miss Sara G., 249 E. 52nd St. (Ch. from Yonkers, N. Y.); Tillman, Gen. Samuel E. (Ch. to Southampton, N. Y.)

Scarsdale: Roeder, Miss Mary S., Fox Meadow School (N)

Southampton: Tillman, Gen. Samuel E. (Ch. from New York)

Utica: Edgette, J. H. (Ch. to 1106 Park Ave.)

Yonkers: Heaney, Miss Sara G. (Ch. to New York)

PENNSYLVANIA

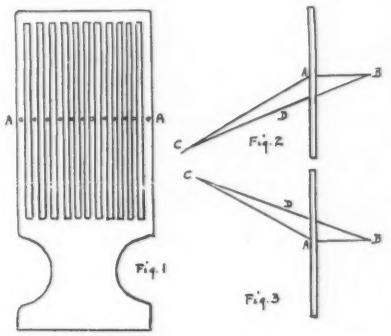
Pittsburgh: Oliver, John W., University of Pittsburgh (N)

Swarthmore: Johnson, Thomas H., Bartol Foundation, Franklin Institute (N)

The Tape Loom

The tape, or braid, loom, shown in the accompanying sketch (Fig. 1), consisted merely of a slab of wood, about three-eighths of an inch thick, about nine or ten inches wide, and about two feet long, in which slits were cut, about a sixteenth of an inch wide, and a series of small holes bored between the slits. A semi-circular segment was cut out of each side of the lower part, so that it could be held upright between the knees of the seated weaver, with the flat side facing him. On this were woven garters, suspenders, ornamental tape, and many other articles of apparel, about an inch wide. It must have been present in practically every Colonial home, for many are found today, although, due to their inherent fragility, they are usually split at one or more points. The earliest one which has come to our attention bears, on one side, the date 1661, and on the other, the legend "MIND YOR (sic) WORK," indicating that it was intended to be used by a comparatively small child. This particular specimen is apparently made of red oak, and was probably originally brought here from England, although it is well authenticated as having belonged to a Massachusetts family for many generations.

This kind of weaving is not a difficult operation, when once the principle is understood. Figs. 2 and 3 represent side views of the loom. First, the strands which are to form the warp (i.e., those which are to run lengthwise in the finished article) are gathered at a common point a short distance back of the loom, as indicated by the letter B. To facilitate explanation, we will suppose that the weaver has chosen to make his warp of alternate red and blue strands. He therefore passes the red strands through the holes, AA (Fig. 1), and the blue strands through the slits, bringing the ends together again in his hand at the point C (Figs. 2 and 3). The strand which is to form the woof (which will run back and forth crosswise in the finished article) is wound on a small shuttle. Some of the shuttles employed for this purpose were merely miniatures of the familiar variety used for weaving on the large loom. Another type resembles the flat piece of wood, deeply notched at each end, on which fishing line is often wound, except that, in the case of the shuttles, the points formed by the notches are curved inward toward one another, rendering them less likely to catch in the warp, as the weaving progresses. Having fastened the loose end of the woof strand to the ends of the warp strands which he holds, he lowers his hand to the point C (Fig. 2). In this position, it will be seen that the red strands, BAC, running through the holes, are above the blue strands, BDC, running through the slits. He then passes the shuttle between the red and the blue strands, allowing the woof strand to unroll from the shuttle as he does so, and brings the latter taut. He then raises the hand holding the warp strands to the point C (Fig. 3), permitting these strands to slip through his fingers as may be necessary, but holding them taut at all times. The red strands, BAC, are now below the blue strands, BDC, and the shuttle is again passed between them in the opposite direction, and the entire operation repeated until the article is finished. It is, of course, necessary, from time to time, whenever the weaving has progressed to a point where there is insufficient space between the red and blue strands for the passage of the shuttle, to release them from the point B (Figs. 2 and 3), pull them further through the loom, and refasten them at B.



Tape Loom

The loom illustrated and explained here is the most primitive type of all. Often the loom proper is fixed upright at one end of a shallow box, which may rest on a table. The box contains two rollers, with their ends resting in holes in its sides and controlled by ratchets, one to hold the red strands and the other the blue ones, before being drawn through the loom. Sometimes the mechanism is quite elaborate, but can usually be readily mastered, if no essential part is missing, by keeping in mind the underlying principle in practically all weaving,—that of alternating the positions of the two sets of warp strands with respect to each other, after each passage of the shuttle.

FOR SALE — Rees' "Cyclopedia of Arts, Sciences and Literature" (Philadelphia, 1821, 45 volumes, poor condition) $18.00; Ure's "Dictionary of Arts, Manufactures and Mines" (Hunt & Rudler, rebound 1875, 9 volumes) $9.00; Morfit's "Arts of Tanning and Currying" (1852) $5.00; Britten's "Watch and Clock Maker's Handbook" (1922) $3.00; Billing's "Tobacco" (1875) $4.00. Whitlock's, 7 Broadway, New Haven, Conn. — *Adv.*

COMMUNICATIONS

From MRS. HERBERT E. WARNER:

"In No. 15 of THE CHRONICLE, reference was made by Mr. G. R. Cope, to old lye or leach stones as being 'very rare now.' I was fortunate enough to acquire one of these stones, complete with the original hollow log, which in this case was made of sycamore, the stone being cut from the coarse East Haven sand stone, which sets it apart from the ordinary leach stones, as they were usually cut from a harder stone, native of the locality where the leach was used. While agreeing with Mr. Cope that leach stones are not common, the genuine hollow log tubs or containers are less common; this fact has led to more or less faking. The writer has seen hollow logs used for tubs, which, by no stretch of the imagination, ever held ashes, to say nothing of hollow logs once used as bee-hives, now posing as leach tubs. The inside of a well preserved leach tub, due to the action of the lye, has a different *feel* to the hand than either the bee-hive or the grain barrel, and a genuine leach tub never shows any evidence of nails. The bee-hive log should deceive no one, as these are bored at irregular intervals between the top and the bottom, in such a manner as to support both ends of wooden bars, running through at different angles, for the bees to build their comb on. One should remember that drainage from a genuine leach tub came from the bottom rather than from the side. Before the lye was used, it was tested for strength. If too weak, the water was evaporated by heating over a fire and boiling, until the residue was of the proper constituency. In some instances at least, the soap-maker used white birch brush in the bottom of the tub. Whether this was universal or not, I do not know. Tradition has it that the variety of brush used, as well as that of the stick used in stirring the soap, had much to do with the color and quality of the soap."

[Still another article, made from a hollowed log, which might be confused with a leach tub, was the corn sheller, described in No. 6 of THE CHRONICLE, page 8. — ED.]

From MR. NEWTON C. BRAINARD:

"In an old trunk containing family papers, I came across a brass rule or scale evidently for architect's or surveyor's use. It resembles in its plan an architect's rule shown in some of the early "Builders Guides", but is considerably larger than those described in these books and has several features not common to them. It was made by Arthur Willis, in 1674, of cast brass, measuring 20-7/16 inches in length and 1-11/16 in width. On the front and back of it are engraved various scales giving fractions of an inch in decimal multiples, and also having the diagonal divisions, so that it is possible to measure as close as 1/100th of an inch. In the middle are two threaded holes apparently for a handle, while at each end is a threaded hole and a plain hole for a dowel, which were evidently intended to hold a cross arm or limb used in laying out angles from points indicated on the scale on the edge. At various times I have inquired of such sources as I thought might be able to give me information regarding this, but have not found anyone who could throw any light on it. Its first owner was probably an ancestor who did considerable surveying for the layouts of some of our Connecticut towns. Unfortunately the nature of it has made it impossible to get a photograph of it which would reproduce in a satisfactory manner. Can anyone tell what this scale is or suggest a source from which such information could be obtained? Is Arthur Willis known? He should have credit for being a skillful workman, for it is interesting to note that the measurements which he plotted agree, even in the finest divisions, with the modern steel scale made by the best makers."

From MR. LAWRENCE B. ROMAINE:

" 'HINGE MANUFACTORY.—At Needham, (in this state,) is a great hinge manufactory, owned by Messrs. M'Intosh & Fisher. Twelve hands, aided by machinery, manufacture yearly forty tons of iron into hinges. The average number of hinges finished per day is about four hundred. The hinges are cut into the proper shape, the holes punched, tools ground and the bellows of the forge blown by machinery.'— *The Boston Mechanic,* April, 1835.

So many people have asked me how old I thought this or that hinge to be, that I am tempted to comment on the above note. The clipping undoubtedly refers to the H and HL hinge, in particular, and various designs of the strap hinge in general. It does not sound as though they attempted the butterfly and other decorative hinges.

The announcement came at the same time that other quantity production ventures in hardware were undertaken. North & Stanley of New Britain, Conn., were just beginning to manufacture wooden cases for locks and many other pieces of hardware. The blacksmith was beginning to lose the hardware business in the metropolitan districts.

To people who have no 'feel' for iron, this quotation will mean nothing, and will be no help to them in "dating" iron hardware. To others, (outside asylums!) , who share this crazy passion for iron with me, it more or less tells a story. In other words, hardware that has a stamped machine-cut look and feel probably was made in the 1830's or later. The real pieces of iron workmanship, of drawn iron, with bevelled edge, delicate finials, hand-tooled surfaces and original designs, were probably made before this period."

We received a most interesting letter from Mr. Roy Vail, and a rejoinder thereto from Mr. L. L. Thwing, with reference to the latter's method of operating the spring-pole lathe, as described on page 3 of our No. 14, and we regret that lack of space prevents our printing both letters in full. Mr. Thwing's article stated, in substance, that when the wood, on which he was working, ceased revolving over and towards him, he allowed the treadle to come up, with the string still taut, so that the wood revolved over and away from him, until the pole reached its original position, and then again pressed the treadle down. Mr. Vail states that he was taught to operate such a lathe by his grandfather, and that when the revolutions of the wood towards him slowed up, he relaxed the pressure of his foot on the treadle, to such an extent that the grip of the string around the wood was released, allowing the latter still to revolve in the same direction, the pole at the same time lifting the treadle, so that when it was again pressed upon, the string would take a fresh grip on the wood, and allow the operation to be repeated. Mr. Thwing's way is the one recommended in Plumier's *Ordinis Minimorum* (1701), so that apparently both methods have been practiced successfully.

THE EARLY IRON INDUSTRY OF CONNECTICUT. History and description of mines, furnaces, and furnace practice of a once most important industry. Seventy octavo pages, leatherette cover, twenty-six illustrations and folded six-page table of furnace details. One dollar, postpaid, Charles Rufus Harte, 28 West Elm Street, New Haven, Connecticut. — *Adv.*